REMARKS

The Office Action dated April 30, 2009, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

By this Response, claims 1, 13, and 16 to more particularly point out and distinctly claim the subject matter of the present invention. No new matter has been added. Support for these amendments may be found in the specification, for example, at paragraph 10. Claims 1-16 are pending in the application, of which claims 1, 13, and 16 are independent claims. Applicants respectfully submit claims 1-16 for consideration.

In view of the above amendments and the following remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections to the claims for the reasons discussed below.

Claim Rejection - 35 U.S.C. 112

Claims 1-12 were rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully submit that this rejection is improper.

Specifically, the Office Action asserted that the limitation of "generating...second multicast tree for control messages...from a network multicast controller to at least one multicast controller at cell level...transmitting the control messages...along the at least

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one second multicast tree to the at least one multicast controller," as recited in claim 1, is indefinite. Also, the Office Action alleged that the limitation is indefinite because it is directed towards multicast messages but can yield a situation where messages are transmitted from the network multicast controller to one cell level controller, which is unicast. In a "Response to Arguments" section, the Office Action appeared to assert that claim 1 is directed towards transmitting, via the second multicast tree, to a single node, and that claim 1 does not recite any limitations about receiving messages via the second multicast tree, on which Applicants' arguments are based (*see* Office Action at page 18).

However, as clearly supported in the specification at Figure 4, the control messages of the claimed invention may be **transmitted** from a network multicast controller (*e.g.,* a SCM) along multicast tree 406 and 408 to one cell-level multicast controller (*e.g.,* a CC) (*see* Specification at paragraphs 29-30). The second multicast tree of the claimed invention corresponds to the multicast tree 406 and 408, which is the message route for the control messages from the network multicast controller to the cell-level multicast controller (*see* Specification at paragraph 29). Also, as clearly shown in the specification at Figure 4, the multicast trees 406 and 408 include multiple routers (*e.g.,* a PIM-R and a PIM-DR) (*see* Specification at paragraphs 24-25 and 29-30). Thus, Applicants respectfully submit that the claimed invention did not limit the control messages to be unicast, but included the feature "second multicast tree" to be the message route for the control messages, or to be the multiple routers that the control messages are transmitted or multicasted to and through. Accordingly, the second multicast tree for the

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control messages of the claimed invention is definite, and Applicants respectfully submit that this rejection is clearly improper. It is thus respectfully requested that this rejection be withdrawn.

Reconsideration and allowance of claims 1-12 are, therefore, respectfully requested.

Claim Rejections - 35 U.S.C. 103

Claims 1, 4, 11, 13, and 15-16 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Thompson (U.S. Patent Appln. Pub. No. 2002/0073086) in view of Korus (U.S. Patent No. 7,075,929). Applicants respectfully submit that each of these claims recites subject matter that is neither disclosed nor suggested in the combination of Thompson and Korus.

Independent claim 1, upon which claims 2-12 depend, is directed to a method including transmitting multicast data packets in at least one first multicast tree from one transmitter through a plurality of multicast controllers to a plurality of recipients. The method also includes generating at least one second multicast tree for control messages in an internet protocol network from a network multicast controller to at least one multicast controller at cell level. The control messages are transmitted from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level. The control messages include information on the multicast transmission of the internet protocol network and a command configured

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to connect to the at least one first multicast tree of the internet protocol network configured for multicasts.

Independent claim 13, upon which claims 14-15 depend, is directed to an arrangement for implementing multicasting in internet protocol networks, the arrangement including a plurality of routers configured to transmit different components in the internet protocol networks to each other. The arrangement also includes at least one first multicast tree configured to transmit multicast packets through a plurality of multicast controllers to a plurality of recipients, and a plurality of cell-level multicast controllers configured to transmit packets to the plurality of receivers. A network multicast controller is arranged to control the cell-level multicast controllers. An internet protocol network comprises at least one second multicast tree reserved for control messages and configured to route control messages from the network multicast controller to the plurality of cell-level multicast controllers. The network multicast controller is configured to transmit the control messages along the at least one second multicast tree to the plurality of cell-level multicast controllers. The control messages comprise information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicast transmissions.

Independent claim 16 is directed to an arrangement including first transmission means for transmitting different components in internet protocol networks to each other, and second transmission means for transmitting multicast packets through a plurality of

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multicast controllers to a plurality of recipients. The arrangement also includes third transmission means for transmitting packets to the plurality of receivers, and control means for controlling the cell-level multicast controllers. An internet protocol network comprises fourth transmission means reserved for control messages for routing control messages transmitted from the control means to the third transmission means. The control means are for transmitting the control messages along the fourth transmission means to the second transmission means. The control messages comprise information on the multicast transmission of the internet protocol network and a command configured to connect to the second transmission means of the internet protocol network configured for multicast transmissions.

Applicants respectfully submit that the combination of Thompson and Korus fails to disclose or suggest all of the features of any of the presently pending claims.

Thompson describes in a network, a query originator injecting queries of network devices into the network at a query node using query messages. The network transports the query messages to the network devices, or to network nodes at which queries about the network devices can be answered. Query responses from the network devices or network nodes are directed through the network to a collection node or nodes (*see* Thompson at Abstract).

Korus describes methods for limiting the scope of flooding of dense mode IP multicast calls. A multicast scope value is determined for each call based on the locations of participating devices for the call at one or more destination sites, zones or

zone clusters. The multicast scope value is adjusted based on user location, as wireless users may roam from site to site or zone to zone (or zone cluster) (*see* Korus at Abstract).

Applicants respectfully submit that the combination of Thompson and Korus fails to disclose or suggest all of the features of any of the presently pending claims. Specifically, the combination of Thompson and Korus does not disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in independent claim 1 and similarly recited in the other independent claims. The Office Action asserted that some of these features are taught in Thompson at Figures 10(a)-10(c), and paragraph 99.

As shown in Figure 10(a), Thompson describes a broadcast center (BC) wanting to send a query to a data distribution tree of program A rooted at content source (CS) 1, this tree referred to as multicast group (A, CS 1) (*see* Thompson at paragraphs 98-99). The BC sends the CS 1 a message to be distributed to program A's recipients instructing them to join a new query distribution group rooted at a BC group, called group (A, BC) (*see* Thompson at paragraph 99). In step 2, the CS 1 multicasts this join instruction to the group (A, CS 1). As shown in Figure 10(b), step 3, the group (A, CS 1) sends join messages up to the BC, constructing the query distribution tree, and as shown in Figure

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10(c), step 4, the BC multicasts queries on the new multicast group (*see* Thompson at paragraph 99).

However, Thompson fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along **the at least one second multicast tree reserved for control messages** to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts" (emphasis added) as recited in independent claim 1 and similarly recited in the other independent claims. Specifically, Thompson does not disclose or suggest a multicast tree reserved for control messages including a command. In contrast, Thompson describes the tree of the program A used to distribute data of the program A **and** to multicast the join instruction (*i.e.*, control message), to the group (A, CS 1) (*see* Thompson at paragraphs 98-99). The new distribution tree rooted at the BC is used to only multicast queries to the group (A, BC), and thus, is not used to multicast instructions (*see* Thompson at paragraphs 98-99). Thompson makes it clear that queries cannot correspond to instructions (*see* Thompson at paragraphs 16 and 88). None of the other embodiments of Thompson discloses or suggests a multicast tree reserved for control messages, or instructions, but instead discloses a tree for sending an instruction **and** for distributing queries and/or data (*see, e.g.*, Thompson at paragraph 104).

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Korus fails to cure the deficiencies of Thompson. As discussed above, Korus describes methods for limiting the scope of flooding of dense mode IP multicast calls, but does not disclose or suggest a multicast tree reserved for control messages. Accordingly, the combination of Thompson and Korus fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in independent claim 1 and similarly recited in the other independent claims.

For at least the reasons discussed above, Applicants respectfully submit that the combination of Thompson and Korus fails to disclose or suggest all of the features of claims 1, 13, and 16. Accordingly, Applicants respectfully request that the rejection of claims 1, 13, and 16 be withdrawn.

Claims 4, 11, and 15 depend from, and further limit, claims 1 and 13. Thus, each of claims 4, 11, and 15 recites subject matter that is neither disclosed nor suggested in the combination of Thompson and Korus. Accordingly, Applicants respectfully request that the rejection of claims 4, 11, and 15 be withdrawn.

Claims 2 and 14 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Thompson in view of Korus and further in view of Khan (U.S. Patent

Appln. Pub. No. 2002/0143951). The Office Action took the position that the combination of Thompson and Korus discloses or suggest all of the features of these claims, except for connecting at least one multicast controller at cell level to at least one multicast tree configured for network control messages. The Office Action then cited Khan to remedy the deficiencies of the combination of Thompson and Korus. Applicants respectfully submit that each of claims 2 and 14 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Khan.

Thompson and Korus are outlined above. Khan describes a method and a system for sending multicast information to a user, using agents and network programs that reside on multicast-enabled computers. The agents receive multicast data packets sent to members of a multicast group. The agents repackage the multicast information into a unicast data packet and forward the unicast data packet to a client registered with the agent (*see* Khan at Abstract).

Applicants respectfully submit that claims 2 and 14 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Khan. Claims 2 and 14 depend from, and further limit, claims 1 and 13. As discussed above, the combination of Thompson and Korus fails to disclose or suggest all of the features of claims 1 and 13. In addition, Khan does not cure the deficiencies of the combination of Thompson and Korus, as Khan fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell

level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in claim 1 and similarly recited in claim 13. Accordingly, Applicants respectfully submit that the combination of Thompson, Korus, and Khan does not disclose or suggest all of the features of claims 2 and 14.

Claims 3, 5, and 9 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Thompson in view of Korus and further in view of Okanoue (U.S. Patent No. 6,243,758). The Office Action took the position that the combination of Thompson, Korus, and Okanoue discloses or suggests all of the features of these claims. Applicants respectfully submit that each of claims 3, 5, and 9 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Okanoue.

Thompson and Korus are outlined above. Okanoue describes a computer network formed by subnetworks in which a multicast scope is defined as a reachable extent of multicast packets. Each host in the scope transmits a multicast packet containing a scope field indicating that transmission of the multicast packet beyond the scope is forbidden. Each host also transmits a boundary flag indicating whether only those hosts within the scope are allowed to participate in a group activity or mobile hosts outside the scope are also allowed to participate in the group activity (*see* Okanoue at Abstract).

Applicants respectfully submit that claims 3, 5, and 9 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Okanoue.

Claims 3, 5, and 9 depend from, and further limit, claim 1. As discussed above, the combination of Thompson and Korus fails to disclose or suggest all of the features of claim 1. In addition, Okanoue does not cure the deficiencies of the combination of Thompson and Korus, as Okanoue fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in claim 1. Accordingly, Applicants respectfully submit that the combination of Thompson, Korus, and Okanoue does not disclose or suggest all of the features of claims 3, 5, and 9.

Claims 6-8 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Thompson in view of Korus and further in view of Amara (U.S. Patent Appln. Pub. No. 2005/0063352). The Office Action took the position that the combination of Thompson, Korus, and Amara discloses or suggests all of the features of these claims. Applicants respectfully submit that each of claims 6-8 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Amara.

Thompson and Korus are outlined above. Amara describes a mobile node roaming away from its home network to a foreign network. The mobile node may communicate using a Mobile Internet Protocol, and it may use Internet Protocol security to communicate with its home network. A foreign agent on the foreign network and a

home agent on the home network may dynamically link a policy to be used for an Internet Protocol security session between the foreign agent and the home agent (*see* Amara at Abstract).

Applicants respectfully submit that claims 6-8 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Amara. Claims 6-8 depend from, and further limit, claim 1. As discussed above, the combination of Thompson and Korus fails to disclose or suggest all of the features of claim 1. In addition, Amara does not cure the deficiencies of the combination of Thompson and Korus, as Amara fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in claim 1. Accordingly, Applicants respectfully submit that the combination of Thompson, Korus, and Amara does not disclose or suggest all of the features of claims 6-8.

Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Korus and further in view of Xu (U.S. Patent Appln. Pub. No. 2005/0283447). The Office Action took the position that the combination of Thompson and Korus discloses or suggest all of the features of these claims, except for notifying, after receiving a control message from a network multicast controller, by at least one

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multicast controller at cell level, recipients of its cell that a multicast is available. The Office Action then cited Xu to remedy the deficiencies of the combination of Thompson and Korus. Applicants respectfully submit that claim 10 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Xu.

Thompson and Korus are outlined above. Xu describes an apparatus for calculating a cost of receiving multicast data from a multicast session. A multicast network includes at least one multicast service, each multicast service including at least one multicast session. The apparatus receives a request to establish a connection to the multicast session, stores a start time for the connection and an end time for the connection and, after termination of the connection, calculates the cost of receiving the multicast data (*see* Xu at Abstract).

Applicants respectfully submit that claim 10 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Xu. Claim 10 depends from, and further limits, claim 1. As discussed above, the combination of Thompson and Korus fails to disclose or suggest all of the features of claim 1. In addition, Xu does not cure the deficiencies of the combination of Thompson and Korus, as Xu fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet

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protocol network configured for multicasts," as recited in claim 1. Accordingly, Applicants respectfully submit that the combination of Thompson, Korus, and Xu does not disclose or suggest all of the features of claim 10.

Claim 12 was rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Korus and further in view of Dean (U.S. Patent Appln. Pub. No. 2003/0061333 of Dean). The Office Action took the position that the combination of Thompson and Korus discloses or suggest all of the features of these claims, except for refraining, after receiving a control message from a network multicast controller through at least one multicast tree configured for control messages, from processing the control message by at least one multicast controller at cell level. The Office Action then cited Dean to remedy the deficiencies of the combination of Thompson and Korus. Applicants respectfully submit that claim 12 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Dean.

Thompson and Korus are outlined above. Dean describes network management services, utilized by a user via a software based console, used on any network connected device, viewed as a web page via the internet. Dynamic updating of the devices available to the console is performed by a Multicast Discovery Protocol (*see* Dean at Abstract).

Applicants respectfully submit that claim 12 recites subject matter that is neither disclosed nor suggested in the combination of Thompson, Korus, and Xu. Claim 12 depends from, and further limits, claim 1. As discussed above, the combination of Thompson and Korus fails to disclose or suggest all of the features of claim 1. In

addition, Xu does not cure the deficiencies of the combination of Thompson and Korus, as Xu fails to disclose or suggest, at least, "transmitting the control messages from the network multicast controller along the at least one second multicast tree reserved for control messages to the at least one multicast controller at cell level, the control messages comprising information on the multicast transmission of the internet protocol network and a command configured to connect to the at least one first multicast tree of the internet protocol network configured for multicasts," as recited in claim 1. Accordingly, Applicants respectfully submit that the combination of Thompson, Korus, and Xu does not disclose or suggest all of the features of claim 12.

Reconsideration and allowance of claims 1-16 are, thus, respectfully requested.

Conclusion

For the reasons set forth above, it is respectfully submitted that each of claims 1-16 recites subject matter that is neither disclosed nor suggested in the cited references. It is, thus, respectfully requested that all of claims 1-16 be allowed, and that this application be passed to issuance.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

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In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
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